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IMPERIAL MYCOLOGICAL INSTITUTE 17 JAN 1944

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1943

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ROMA — STABILIMENTO TIPOGRAFICO F. FAILLI

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ACTIVITY OF THE INTERNATIONAL INSTITUTE OF AGRICULTURE

March Session of the Permanent Committee. — The Spring Session of the Permanent Committee of the International Institute of Agriculture was opened on March 15 under the chairmanship of Baron G. Acerbo.

The following countries were represented : Germany, Argentina, Bulgaria, Colombia, Croatia, Denmark, Spain, Finland, Hungary, Ireland, Iran, Italy, Japan, Paraguay, Portugal, Romania, San Marino, Slovakia, Sweden, Switzerland, Turkey.

The reports of the President and of the Secretary General showed once more that the Institute is in full activity and that in spite of present exceptional difficulties, the official representatives of an important number of countries give their full and constant support to the Institute work.

The Committee discussed in detail also the questions dealt with in the reports of the Finance Commission and of the Committee on Publications. The various points of the program of documentation were also fully discussed, especially in regard to the scientific activity to be displayed by the Institute in view of the future economic reconstruction in which all the problems connected with agriculture will play a capital part.

BOOKS PRESENTED TO THE LIBRARY OF THE INTERNATIONAL INSTITUTE OF AGRICULTURE

Akeret, R. La traite. Guide du vacher suisse, 2ème édition. Berne. Verbandsdruckerei, 1942. 71 p. (Publications de la Commission suisse du lait. N. 2).

Annuaire de la brasserie belge 1942. [Bruxelles, D. Bodden & Dechy, 1942]. 428 p.

Antognini, R. Alimenti ed alimentazione ; odierni aspetti del problema. Bellinzona, Istituto editoriale ticinese, 1942. 101 p.

Benesch F. Die Geburtshilfe bei Rind und Pferd (Entwicklungs- und Berichtigungsmechanik, einschliesslich der Embryotomie) ; ein praktischer Leitfaden für Tierärzte und Studierende. 3. wesentl. erw. und umgearb. Aufl. Berlin, Urban & Schwarzenberg, 1942. VII, 295 p.

Bonetti, E. La Bassa friulana. Trieste, Stabilimento tipografico nazionale. 1942-XX, 35 p. (Pubblicazioni dell'Istituto di geografia della R. Università di Trieste, n. 1).

Bosisio, O. La contabilità delle piccole aziende secondo le disposizioni del nuovo codice civile. Milano, L. di G. Pirola, 1942. [7], 146 p.

Cadalbert, B. Appunti di politica economica di guerra ; lezioni tenute nella R. Università di Trieste nell'anno accademico 1940-41. Trieste, Stab. Tip. nazionale, 1942. 90 p.

Clementi, F. La pollicoltura italiana nella tecnica, nella pratica, nell'organizzazione. [Roma], Sezione massaie rurali del P.N.F., [1942]. 164 p.

Flaskamp, F. X. Das Wyck-Kerssenbrock'sche Rittergut Neuhaus im Kirchspiel St. Vit-Wiedenbrück. Ein Beitrag zur westfälischen Hof- und Familiengeschichte. 1. Teil : Karte (Original 64 cm/72 cm 7, 1788. Gütersloh i. Westf., Thiele, 1940. (Quellen und Forschungen zur Natur und Geschichte des Kreises Wiedenbrück. 58. Heft).

Fortunati, P. Aspetti sociali dell'assalto al latifondo. Roma, [1941]. 64 p. (Quaderni di coltura politica. Serie 11ª, n. 3.)

Könemann, E. Ölfruchtbau in allen Lagen ; Anbau, Bedeutung und Verwertung. Berlin, Siebeneicher, 1942. 95 p.

Küntzel, C. Scheunen, Speicher, Schuppen. Berlin, Reichsnährstand Verlags-Ges. m. b. H., 1942. 96 p. (Arbeiten des Reichsnährstandes, Bd. 69.)

Lengsfeld, J. Der Ackerwagen. Entwicklungsgang aus luftbereiftem Fahrzeug. 3. Aufl. Berlin, Reichsnährstand Verlags-Ges. m. b. H., 1942. 135 p. (Arbeiten des Reichsnährstandes, Bd. 29.)

Moser, R. u. A. **Sciuchetti.** Allgemeine Tierzucht. Leitfaden für den Unterricht an landwirtschaftlichen Schulen, hrsg. vom Schweizerischen Verband der Lehrer an landwirtschaftlichen Schulen und der Ingenieur-Agronomen. Frauenfeld, Huber & Cº., [1941]. 104 p. (Landwirtschaftliche Lehrbücher.)

Poggiolini, A. Di alcune stime coloniche nella provincia di Forlì. Forlì, Tipografia del Littorio, [1942]. 29 p.

Russo, G. Entomologia agraria ; secondo le lezioni del Prof. Giuseppe Russo. Parte generale, mezzi di lotta e parte speciale (Curati dal Dr. P. Sangiorgio e P. Dinucci). Anno accademico 1942-43. Pisa, G.U.F. Sezione editoriale, [1942]. 478 p. (R. Università di Pisa. Facoltà di agraria).

Savorelli, G. Il colombo. Milano, U. Hoepli, 1942. 379 p.

Schädelin, W. Wald unserer Heimat. Erlenbach-Zürich, Rotapfel, [1941]. 73 p.

Tudeer, A. E. Finnlands bank, 1912-1936. Helsingfors, [Buchdruckerei des Staates], 1942. VIII, 407 p.

Vageler, P. Koloniale Bodenkunde und Wirtschaftsplanung. Berlin, Parey, 1942. 16 p.

Vageler, P. Die Technik der modernen bodenkundlichen Aufnahme von Grossraumländern. Berlin, Parey, 1942. 24 p. VII Tafeln.

Vageler, P. Die Untersuchung tropischer Böden und ihre Auswertung für die Praxis. Berlin, Parey, 1942. 28 p.

Die **Volkswirtschaft** Ungarns im Jahre 1940 und in Jahre 1941. Budapest, « Pester Lloyd », 1941, 1942. (Wirtschaftsjahrbuch des « Pester Lloyd ».) 2 v.

Zanini E. La conservazione dei foraggi nei sili. Palermo, Ente di colonizzazione del latifondo siciliano, [1942]. 189 p. (I « Quaderni » dell'Ente di colonizzazione del latifondo siciliano, 3.)

Zeeb, R. Erfolgreiche Milchschafhaltung ; Nutzung, Rentabilität, Zucht, Haltung, naturgemässe Heilweise auf Grund jahrzehntelanger Erfahrungen im Binnenland. Berlin, Siebeneicher, 1941. 60 p.

INTERNATIONAL BULLETIN
OF PLANT PROTECTION

1943 No. 4

DISCOVERIES AND CURRENT EVENTS *

SPAIN.

Damage Caused to Potatoes by *Poeciloscytus cognatus* †

In potato fields in Madrid Province, during the years 1941-42, the Lygaeid *Poeciloscytus cognatus* associated with other Hemipters- Heteroptera became widespread. It caused symptoms similar to those produced by the Cicadellidae.

In experiments on controlling this pest satisfactory results were obtained with a 3 per cent. nicotine dust.

ITALY.

Observation on *Phytophthora cambivora* Causal Agent of the Chestnut Ink Disease §

The first question which comes to the fore when investigating the ink disease of the chestnut is that of the causes for different trees being proof against the parasite (*Phytophthora cambivora* Petri) which provokes the disease. In fact the walnut and the European chestnut are susceptible but the Japanese chestnut, the beech and nearly all the forest species within the area of diffusion of this fungus are either not attacked or else definitely unaffected.

It has been said that some cases of limitation or check of the disease are due to the prevalence of common saprophytes growing on the tissue killed by the parasite, when the surrounding atmosphere, particularly low, slows down its progress ; the very considerable susceptibility of the parasite to low temperatures would seem to explain certain apparent or real cases of recovery which, following a particularly severe winter or because of the treatment invented and put into operation by Gandolfo [1], were observed.

* Under this and the next heading the countries are arranged in French alphabetical order.

† Communication from the official correspondent of the International Institute of Agriculture, Sr. José del Cañizo, Agricultural Engineer and Bachelor of Natural Science, Phytopathological Station, Madrid, Spain.

§ Communication from Prof. Dr. Vincenzo Rivera, Director of the Institute of Plant Pathology, University of Perugia, Italy.

These concepts present a starting point for experiment work tending to give fruitful results both from the scientific and from the practical standpoint.

I thought it advisable to determine first of all whether there is a compatibility and if so, what, between the woods of the different species and the development *in vitro* of the mycelium of *Phyt. cambivora* [2], naturally including also in the comparison the chestnut and the walnut.

For over two years laboratory research was carried out consisting in the culture of the mycelium of the parasite on different woods, sterilized in Petri dishes and moistened with spring water or with malt, or else on the sawdust of these woods, also sterilized in Petri dishes and moistened with water or malt.

It was found that, on the different woods, the development of the mycelium took place more or less rapidly or not at all and that in consequence with experiments lasting 30 days it was possible to establish a scale of development on the various woods (in the two cases according to whether ordinary water or malt was used), results which were confirmed at every test.

From these concordant results it was possible to draw up a ' scale of compatibility ' of the different woods utilized in the experiment and reproduced below :

	Sterilized wood soaked in		Sterilized sawdust moistened with	
	water	malt	water	malt
	Development			
Beech (evaporated)	weak	excellent	weak	splendid
Beech	very weak	good	weak	excellent
Poplar	practically nil	good	weak	good
Fir-tree	nil	fairly good	weak	good
Larch	nil	nil	nil	good
Pine	nil	nil	nil	fairly good
Oak	nil	nil	practically nil	fairly good
Walnut	practically nil	fairly good	nil	good
Chestnut	nil	nil	nil	practically nil

In the course of two years experiment work, 10 series of these tests were carried out.

The results which agreed in all the series, authorize us to deduce therefore that there are woods which may be considered as compatible with the development of the mycelium of this parasite of the chestnut, in particular, evaporated beech, beech and the poplar ; on other woods the mycelium will only develop if a substance especially suitable for the purpose, such as malt, is added, but this addition is not enough to obtain the development of the mycelium on chestnut wood, as a decided incompatibility *in vitro* between the wood and the specific parasite of the chestnut is noted constantly.

By prolonging the duration of the experiment with malt for over a month, at favourable temperatures (22°C. or over), it happens that, under the best conditions of culture (sawdust with malt), the mycelium may also be caused to develop on chestnut wood, but the vigour and density of the hyphae are much inferior compared to the other sawdusts ; this result illustrated by Fig. 1 may, in our opinion, be interpreted by considering chestnut wood as practically incompatible with or manifestly proof against the specific parasite of the cambium of the living chestnut tree.

For the other woods, it may be taken that they are either favourable or indifferent to the development of this fungus, but there is no doubt that, in the case of

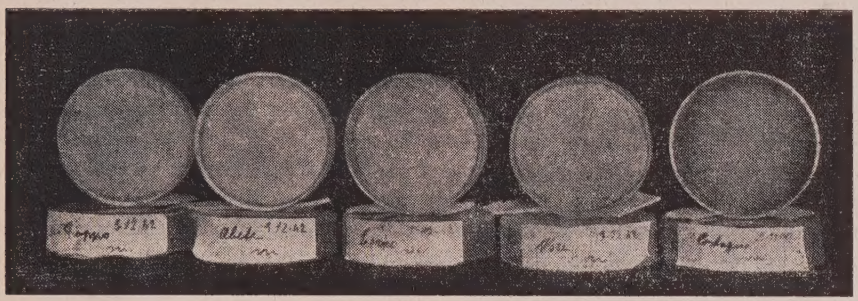

Fig. 1. — While on poplar and fir sawdust, an appreciable development of the mycelium of *Phytophthora cambivora* is obtained, even without the addition of malt to the water used to moisten the medium, it is only with difficulty and then with the addition of malt at a temperature of 22°C. that occasionally the mycelium can be made to grow on chestnut sawdust ; the hyphae growing on this latter medium are invaded at the bottom by the ' ink ' which the chestnut wood forms in the presence of its parasite. The dishes contain different sterile sawdusts moistened with malt and are arranged according to the development acquired by the mycelium ; in the last dish on the right (containing chestnut sawdust), the mycelium has developed with difficulty and appears less dense than in the other cases.

the chestnut, the growth of the hyphae is checked, a fact which did not occur with any of the other woods used in the tests.

The wood of the plant most susceptible to ink disease, therefore, has a practically inhibitive effect on the mycelium of the parasite, such as is not possessed or shown by the widely differing woods of plants not receptive to the parasite, nor by the wood of the walnut which is also parasitized. Besides a fundamental incompatibility, the mechanism of which is not very clear, it should be noted that the tannic compound which is produced in the wood of the chestnut in the presence of *Phytophthora* prevents a pronounced development of the mycelium as is generally the case with other woods. This interpretation is justified by the observation which could be made each time it was possible to obtain any appreciable growth of mycelium on chestnut sawdust with malt ; in this case the production of the ' ink ' takes place at the same time as the development of the fungus in the Petri dish containing chestnut sawdust as a consequence of the growth of the fungus, seeing that ' ink ' is not formed when the mycelium has not been able to attain a certain development on the wood of this tree [3].

The ' ink ' which the chestnut produces in the presence of *Phytophthora* which develops on the wood, penetrates up into the hyphae, the basal parts of which on

contact with the sub-stratum, for this reason appear brown in colour. Should the inhibition of the development or the slowing down of the growth of the mycelium noted continually in the presence of chestnut wood *in vitro* be attributed to this substance ?

In the event of this being proved for wood in sections or small fragments, can an ability of the same nature be attributed also to the formation of ' ink ' by the living wood ?

At this point, it is to be supposed that the production of ' ink ' in chestnut-trees infected by the mycelium of *Phyt. cambivora* may represent also a defensive organization of the wood against the advance of the parasite, generally not effectual enough to save the plant, though, however, the abundant and prompt flow of ' ink ' in the wood slows down the course of the disease.

Whatever the case it must be acknowledged that while the cambium constitutes a living medium particularly favourable for the development of the parasite, the wood of the same plant represents a medium quite unsuitable or opposed to the growth of the fungus, so that two tissues of one and the same host plant have characteristics in absolute opposition in regard to the same parasite. It is not the first time in plant pathology that it has been found that fundamentally defensive reactions constitute the semblance of the disease and that considerable harm is caused to the host through these reactions.

It may be deduced more explicitly that the inhibitory or retarding efficacy exercized by the ' ink ' *in vitro* on the development of the mycelium being recognized, the slowing down of the development of the parasite *in vivo* and eventually the disappearance of the latter in the parts long infested may also be attributed to this substance ; the action of the ' ink ' would perhaps explain better the slowing down of the disease than the action of saprophytes menacing on the other side the progress of the mycelium of *Phytophthora*.

* * *

The ' thermic susceptibility ' of the mycelium of *Phyt. cambivora* may arouse particular interest in the scientist and also the practical worker ; if for all the Peronosporaceae, the knowledge of the optimum temperature for the vegetative development of the fungus, for the production of the germs of diffusion and reproduction and especially the limiting temperatures for the development of the mycelium are very important, the data on the thermic susceptibility of the parasite under study are perhaps even more so. It is thought in fact, that not only the geographical distribution, altitude and latitude, of the disease, but also the seasonal manifestations of the latter depend on the thermic conditions of the environment.

Following up these facts, first of all the susceptibility of the mycelium of *Phyt. cambivora*, cultivated on malt agar, to high temperatures was tested.

Tubes of malt agar, as soon as they were inoculated in stria with mycelium obtained from pure cultures, were exposed, for varying periods, to different temperatures thermostat-regulated.

Temperatures were selected which descended from 57°C. to 21°C. and the length of the period varied from an entire day to fractions of hours.

Of particular interest in these investigations are the results on the devitalizing temperatures of the mycelium and also the optimum or practically optimum temperatures for the development of same ; for the present, the results will be indicated without going into detail.

In view of the uniform and regular manner in which the fungus behaved in regard to the thermic treatment, it will suffice to mention the result obtained with only two temperatures and for periods to which corresponded respectively devitalization and stimulation of growth (that is, more rapid and more abundant development compared with the controls).

The following are the results schematized to the maximum :

Devitalizing temperatures of mycelium : 56°C. for 30′ ; 41-42°C. for one hour and 15′

Temperature stimulating development of the mycelium : 56°C. for 20′ ; 41-42°C. for 1 hour.

In the graphical representation of the temperatures depressing and those stimulating the development of the mycelium, the line delimiting the threshold of devitalization and that indicating the optimum or approximately optimum temperatures for the development of the mycelium present a similar course and are almost parallel.

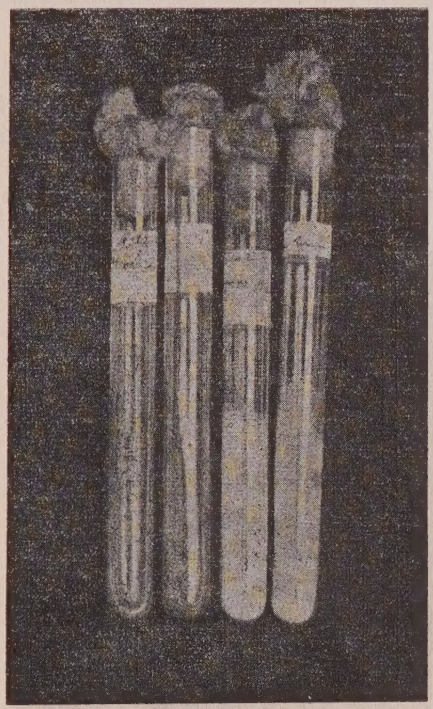

Fig. 2. — The exposure of tubes of culture of the mycelium of *Phyt. cambivora* to a temperature of 41-42°C. for 1 hour and 15′ is sufficient to inhibit the development of the fungus on malt agar (left), while exposure for an hour only, has a decidedly stimulating effect on the growth of the fungus (right), in comparison with the control tubes maintained at a temperature of 22°C. The 'restrictive' temperatures, therefore, vary little from those stimulating the mycelium.

It is undoubtedly of interest to observe that the devitalizing temperatures and those stimulating growth differ little, which fact constitutes, as has been found in other cases [4], not only an important finding, but also a reason for establishing specific dispositions in the case of eventual thermotherapeutic interventions. Fig. 2 shows the results obtained with treatment at 42 C. for the duration of an hour (right), and for an hour and 15 minutes (left) ; after only 48 hours from inoculation of the mycelium, the development of same, in the tubes subjected to treatment, appeared very considerable in the first case, in comparison with the control tubes maintained at a temperature of 22°C., while in the tubes kept at

a temperature of 41-42°C. for 1 hour 15′, there was no development whatsoever of the mycelium.

When the thermic susceptibility of this mycelium is compared with that of the mycelium of *Rosellinia necatrix* for the devitalization of which an exposure of six hours or more at a temperature of 43°C. is necessary, and for which an exposure of 3 hours at 43°C. represents a practically optimum treatment, the stability of a thermic basis which we have believed to be able to contribute towards the efforts at controlling the ink disease of the chestnut is understood.

* * *

The control experiments in questions were carried out at San Leo Bastia, Perugia, May 16, 1940, on some chestnut trees severely attacked by ink disease, the existence of which at the base of the trunk was ascertained by barking the neighbouring trees, all badly affected by the disease like those employed in the experiment; it was found that all the large trees, like those selected for treatment, presented a withered side, had the base more or less extensively blackened (Fig. 3).

Fig. 3. — Presence of the disease ascertained by barking the trees near the one treated and showing, like it, part of the withered corona : the blackened wood is clearly seen at the base of the tree.

Fig. 4. — The treatment proposed controlling ink disease consists in digging a small trench around the diseased chestnut tree so as to expose only the top large roots.

Some photographs were taken of the treatment and of the state of the plant before and after treatment and are here reproduced.

One side of the plant shown in Fig. 5 to 8 was already affected by the disease, appearing on May 16, 1940 deprived of leaves on the part corresponding to the parasitized region of the trunk.

Fig. 5. — Two buckets of boiling water may be sufficient for a large tree ; the water should be poured from a certain height up the trunk so that it runs over the diseased part and especially over the side where the disease is most evident. The hot water collects at the foot of the tree and is left in the trench dug for the purpose.

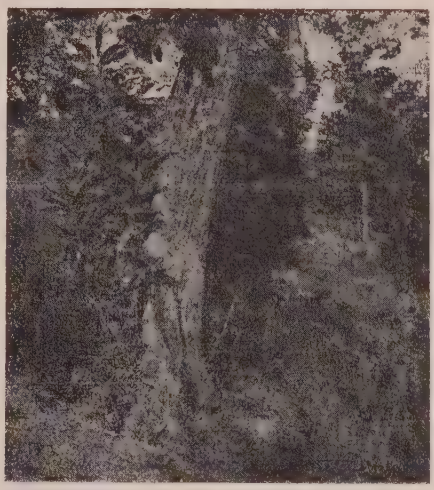

Fig. 6. — After two and a half years the diseased and treated tree is not dead or badly decayed, as is the case for many nearby trees ; on the contrary, the aspect of the treated tree is again flourishing ; the side treated with boiling water has no bark ; this has healed up about the part which was diseased, producing healthy and young cicatricial tissue.

Fig. 7. — Diseased tree treated on May 16, 1940.

Fig. 8. — The same tree shown in Fig. 7 photographed on October 26, 1942. It is seen that after two years the withered part of the tree has not become larger and that the green part is hardy and vigorous.

The boiling water was poured over this side of the plant, letting it run over the bark and then collect at the foot of the tree in a ditch dug around it; thus, around each plant were poured slowly two cans, approximately 30 litres, of boiling water, which after having flowed over the diseased part of the plant, collected at the base in a small semi-circular trench dug in the ground about the plant treated.

Two years were allowed to pass without making any attempt to ascertain the result of the teatment; in June 1942, after inspection carried out at San Leo Bastia and an examination of the plant treated, it was found that it appeared improved as regards vegetative conditions and no longer showed symptoms of ink disease in the trunk and in the exposed roots of the plant.

I wish to point out that this was an isolated experiment and that consequently experiment work will have to be amplified and repeated, but there is no occasion to under-estimate the value of this one experiment which would seem a propitious starting point for effective control.

The extraordinary thermic susceptibility of the mycelium of the parasite indicated in the experiments *in vitro*, therefore, is not belied by the experiments on the host-parasite complex: the facility of application of the method suggested and its extreme simplicity are unquestionably the positive and encouraging characteristics of the control method devised and tested.

Notes:

[1] PETRI, L. Di un nuovo metodo di cura del « mal dell'inchiostro » del castagno. *Bollettino della R. Stazione di Patologia vegetale* [di Roma], Firenze, 1928, anno VIII, n. ser., n. 4, pp. 339-356, figg. 1-4.

[2] The first consignment of mycelium of *Phyt. cambivora* utilized in these experiments was kindly sent me by Prof. L. Petri, Director of the Royal Station of Plant Pathology at Rome, to whom I renew my sincere thanks.

[3] As observed by L. Petri since 1917, the melanogenic action of the fungus is explained by the oxidation of the tannic substances of the root, which can also be reproduced by cultivating saprophytic fungi on dead roots.

[4] RIVERA, VINCENZO. Sui marciumi radicali da *Rosellinia necatrix* e *Agaricus melleus*: sensibilità per la temperatura dell'ambiente radicale, influenza del terreno e della natura del legname della pianta ospite; mezzi di cura. *Nuovo Giornale Botanico Italiano* (Nuova serie), Firenze, 1940, vol. XLVII, n. 2, pp. 477-486, figg. 1-5.

RIVERA, VINCENZO. Malattie delle piante. Vol. I. Amatrice, 1942, pp. 53-54.

LEGISLATIVE AND ADMINISTRATIVE MEASURES

Germany. — A Circular of January 5, 1943 lays down measures with a view to checking the damage caused by hares.

In this respect, attention is called to the provisions of Circular dated April 8, 1940 relative to wild rabbits [see this *Bulletin*, 1940, No. 12, pp. 238-239].

Hares are a danger to nurseries, fruit and truck crops and others grown on enclosed land, particularly in winter when a thick layer of snow enables them to penetrate in.

Owners of shooting-licences are required to do their utmost to reduce to a minimum the damage caused to crops by game. According to the law in force, however, hunting in enclosed land is prohibited. Therefore this Circular grants the competent authorities the right to authorize any owner of a shooting-licence entry, in agreement with the proprietor of the land, into the enclosed area in question and to destroy hares and all other game which may have caused damage. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1 März 1943, Bd. XV, Nr. 1, S. 5-7).

*** A Circular dated January 26, 1943 authorizes the administrative authorities to allow those persons who will have made application, to employ the preparation 'Ventox' for the control of insects and other animal pests. These persons, in employing this preparation, are obliged to observe the conditions of the Decrees of August 25, 1938 and February 1941 [see this *Bulletin* 1939, No. 2, pp. 28-29 and 1941, No. 5, pp. 94-95 respectively] relative to the use of ethylene oxide ; they are also required to keep to the rules laid down by the manufacturing firm for using 'Ventox'. (*Ibid.*, S. 1-2).

Germany (Protectorate of Bohemia and Moravia). — By Notification of December 5, 1942 and by virtue of the Decree dated February 24, 1939 relative to the control of the Colorado beetle [*Leptinotarsa decemlineata*] [see this *Bulletin* 1940, No. 1, pp. 7-8], the Minister of Agriculture and Forests informs interested parties that the presence of this insect has also been reported in Spain. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. März 1943, Bd. XV, Nr. 1, S. 10).

*** Ministerial Notification No. 1162 of December 28, 1942 contains the list of preparations authorized for the disinfection of seed, in pursuance of the Notification dated May 26, 1942 relative to the compulsory disinfection of grain seed [see this *Bulletin* 1942, No. 10, p. 142]. The Notification of May 13, 1942 [see this *Bulletin* 1942, No. 11, p. 157] is abrogated. (*Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin, Anfang Februar 1943, 23. Jahrg., Nr. 2, S. 12).

Germany (Brunswick). — By Decree of December 1, 1942, the public establishments for seed disinfection are placed under official supervision.

The provisions are, in general, similar to those adopted by the Decrees of June 4, 1934 and May 9, 1936 respectively in the province of Saxony and in Oldenburg [see this *Bulletin* 1934, No. 11, p. 248 and 1936, No. 8, p. 173]. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. März 1943, Bd. XV, Nr. 1, S. 7-8.).

Germany (**Government General**). — A Decree dated December 20, 1942 relative to the general obligations devolving on the farmer includes, *inter alia*, that of removing weeds from cultivated land, and of cutting them on waste land, meadows and grassland, before they form seed.

The control by every possible means available of animal pests (crows, voles, caterpillars, slugs, etc.) is laid down. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. März 1943, Bd. XV, Nr. 1, S. 10-12).

Germany (**Lorraine**). — By Ordinance of January 11, 1943 preparations containing copper or copper substitutes can only be consigned on presentation of a special permit in the same way as was laid down in the German Reich by Ordinance of October, 10, 1942 [see this *Bulletin* 1943, No. 1, p. 7]. (*Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin, Anfang Februar 1943, 23. Jahrg., Nr. 2, S. 12).

Germany (**Saxony**). — Ordinance of January 20, 1943 relative to the control of suckers [*Psylla*], scale insects and other enemies of fruit trees, prescribes treating, during the winter period, fruit crops with carbolineum in compliance with the rules established by the Plant Protection Service.

The administrative authorities, in agreement with the Plant Protection Service, will decide the necessary dispositions for the application of this Ordinance. The said authorities may, according to the Ordinance of March 17, 1942 relative to the utilization of sprayers by the community in common [see this *Bulletin* 1942, No. 6, p. 91], lay down that, in the communes, control measures are to be organized on a collective basis. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. März 1943, Bd. XV, Nr. 1, S. 9-10).

Germany (**Occupied Territoires**). — The Central Plant Protection Service for occupied Ukraine instituted at Kiev [see this *Bulletin* 1943, No. 1, p. 7] has been supplemented by the establishment of an Institute for plant diseases and pests. (*Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin, Anfang Februar 1943, 23. Jahrg, Nr. 2, S. 12).

Belgium. — By Ordinance No. 1/43 of February 22, 1943 the supply of fungicides containing copper, for use in spraying, is limited to (*a*) professional growers cultivating over 5000 sq. metres, members of the C. N. A. A. (Corporation Nationale de l'Agriculture et de l'Alimentation ') ; (*b*) growers ranking as professionals cultivating less than 5000 sq. m. ; (*c*) smallholders cultivating less than 5000 sq. m. and over 50 sq. m. for each member of the household ; (*d*) local associations affiliated

to the ' Fédération royale des Sociétés horticoles de Belgique ', to the ' Ligue nationale du Coin de Terre ', or constituted under the communal Administrations ; (*e*) organizations which have brought waste land into cultivation or ploughed up grassland proved by a certificate of the agronomist of the State and the communal Administration indicating the location of the area in question.

Fungicides containing copper will be supplied to the interested parties on presentation of vouchers for pure copper which will be given on application through the general association ' Matières premières pour l'Agriculture ' and through the intervention of the local secretaries of the C. N. A. A.

The vouchers for pure copper will be allotted per 1000 sq. m. (with a minimum of 1000 sq. m.) of late, semi-early or early potatoes which will be harvested in 1943 at the rate of 1/2 kg. of pure copper per 1000 sq. m.

Through the intervention of the general associations attached to the C. N. A. A. and according to the conditions which will be determined subsequently, there will be allotted :

for hops : 10 kg. pure copper per 1000 sq. m. ;
intensive orchards : 1/2 kg. pure copper per 1000 sq. m. ;
grazed and mowed orchards : 0.25 kg. pure copper per 1000 sq. m. ;
tomato and celery crops : 1.5 kg. pure copper per 1000 sq. m. ;
fruit crops grown under glass : 2 kg. pure copper per 1000 sq. m.

When the area eligible for these vouchers is not a whole multiple of 10 ares, it is carried to the multiple of 10 ares immediately above.

The vouchers for pure copper are valid from the date of issue up to July 31, 1943 inclusive.

These vouchers entitle, per kg. of pure copper stated, the holder to the quantity indicated of one of the fungicides given in the list which will be published by the general Association.

Belgian and foreign manufacturers, or their representatives, may only sell fungicides containing copper to wholesalers approved by the general Association ' Matières premières pour l'Agriculture ', to makers of copper fungicides considered as wholesalers and approved as such, and to other manufacturers of copper fungicides.

Wholesalers or makers considered as wholesalers may only sell fungicides containing copper to other wholesalers, to other makers considered as wholesalers, to retailers and to consumers.

Retailers may only sell fungicides containing copper to other retailers and to consumers.

Request may be made for their acceptance in the capacity of wholesalers for copper fungicides by private individuals or corporate bodies who prove purchase for a minimum value of 60,000 francs, during one of the crop years beginning July 1 and ending June 30, 1937-38, 1938-39, 1939-40, 1940-41, 1941-42, of fungicides containing copper :

(*a*) either from Belgian or foreign manufacturers or from the sales organizations of either, for resale in Belgium to merchants and consumers ;

(*b*) or from Belgian manufacturers or from their sales organizations for resale abroad.

The holders of the vouchers for pure copper must hand these over, in exchange for the corresponding quantity of copper fungicide due to them, to an approved wholesaler or to a retail seller of fungicides containing copper.

If the merchant cannot immediately deliver the goods in exchange for the vouchers presented, he is obliged to give the holder a receipt which the latter will return to him on delivery of the quantity of the copper fungicides for which the vouchers are valid.

In order to account for their sales or for their supplies in copper fungicides, retailers will remit to the wholesalers the vouchers handed them by the holders and for a corresponding quantity. All instructions relative to this surrender of vouchers will be communicated them by the wholesalers.

In the same way the wholesalers will have to hand over the vouchers obtained from the retailers to the manufacturers.

Manufacturers of fungicides containing copper may, on their responsibility, allow wholesalers to hold stocks of these fungicides, with a maximum of 10,000 kg. pure copper.

Wholesalers may place stocks with the retailers, under the same conditions, but with a maximum of 1000 kg. pure copper.

Approved wholesale dealers in copper fungicides are required to notify the general Association ' Matières premières pour l'Agriculture ' of these stocking operations or eventual re-consignment according to the rules which will be made known to them by circular.

Derogation of the provisions of this Ordinance may be admitted by the president of the general Association, especially in the case where their strict application would prevent assuring a regular distribution of copper fungicides. (*Moniteur belge*, Bruxelles, 25 février 1943, nº 56, p. 894-896).

Norway. — Law No. 12 dated March 12, 1942 modifies the Decree of May 15, 1941 [see this *Bulletin* 1941, No. 9, p. 167] prohibiting the treatment of plants in flower with preparations containing arsenic. (*Norsk Lovtidend*, Oslo 20 mars 1942, nr. 18, side 221).

RECENT BIBLIOGRAPHY

ANDRÉ, Marc. L'hivernation chez les Tétranyques et ses rapports avec la lutte contre les Acariens phytophages. *Bulletin du Muséum National d'Histoire Naturelle*, Paris, 1942, 2e série, tome XIV, nº 1, p. 57-62. Index bibliographique, p. 61-62.

BALÁS, Géza. Három, Magyarországra új paizstetü. *A M. Kir. Kertészeti Akadémia Közleményei*, Budapest 1942, VIII. évf., 159.o.
[In Hungarian, with title and summary also in German: — ' Drei, für Ungarn neue Schildläuse '. - *Aspidiotus rapax* on *Cytisus austriacus* ; *Chionaspis evonymi* on *Euonymus* spp. ; *Lepidosaphes conchiformis* on *Ulmus* spp.].

BALDACCI, Elio. Eccesso di azoto nel terreno ed attacchi di *Piricularia oryzae* nella patologia del riso. *Risicoltura*, Vercelli, 1942, anno XXXI, n. 12, pp. 161-167, figg. 1-6.

BAWDEN, F. C. Potato virus diseases. *Nature*, London, 1942, Vol. 150, No. 3808, pp. 476-477.

BÖHMEL, W., und JANCKE, O. Beitrag zur Embryonalentwicklung der Wintereier von Aphiden. *Zeitschrift für angewandte Entomologie*, Berlin 1942, Bd. XXIX, Heft 4, S. [636]-658, Abb. 1-17. Schrifttum, S. 657-658.

BRAMMANIS, L. Über den Verlauf einer Massenvermehrung des Kiefernspinners in Lettlands Forsten. *Anzeiger für Schädlingskunde*, Berlin 1942, XVIII. Jahrg., Heft 12, S. 139-140.
[*Dendrolimus pini*].

BRAUN, H. Biologische Spezialisierung bei *Synchytrium endobioticum* (Schilb.) Perc. (Vorläufige Mitteilung). *Zeitschrift für Pflanzenkrankheiten* (*Pflanzenpathologie*) *und Pflanzenschutz*, Stuttgart 1942, 52. Bd., Heft 11, S. [481]-486, Abb. 1-2.

BRENY, R. Observations sur les sorties printanières du doryphore en 1941, dans la région de Gembloux. *Bulletin de l'Institut agronomique et des Stations de Recherches de Gembloux*, Gembloux, 1941, tome X, nos 1-4, p. [147]-151, 3 graph.
[With titles and summaries also in Flemish, German and English. - *Leptinotarsa decemlineata*].

BUSVINE, J. R. Relative toxicity of insecticides. *Nature*, London, 1942, Vol. 150, No. 3798, pp. 208-209.

CALDWELL, John. The production of virus-free potatoes in the south-west of England. *The Annals of Applied Biology*, Cambridge, 1942, Vol. 29, No. 3, pp. 265-267.

CANDURA, G[iuseppe] S[alvatore]. Trattamenti di guerra e di pace per la difesa antiparassitaria delle piante da frutto. *Pubblicazioni pratiche di Fitopatologia e Igiene*, *Nº 8*, Bolzano, Casa editrice libraria Licinio Cappelli, 1942, 12 pp., 12 figg. L. 3,75.

CANDURA, G[iuseppe] S[alvatore]. Contro le cocciniglie dei fruttiferi. Esperienze pluriennali con i polisolfuri. *Pubblicazioni pratiche di Fitopatologia e Igiene*, *Nº 9*, Bolzano, Casa editrice libraria Licinio Cappelli, 1943, 16 pp., 5 figg. L. 5.

CANDURA, G[iuseppe] S[alvatore]. L'incremento della produzione della frutta. La lotta contro le cocciniglie. Risultati di esperienze pluriennali con i polisolfuri. *Giornale di Agricoltura*, Roma, 1943, anno LIII, n. 6, p. 34.

CARTWRIGHT, K. St G., and FINDLAY, W. P. K. Principal decays of British hardwoods. *The Annals of Applied Biology*, Cambridge, 1942, Vol. 29, No. 3, pp. 219-253, pls. 2-6. References, pp. 250-253.
[*Armillaria mucida*, *Fomes fomentarius*, *F. fraxineus*, *F. igniarius*, *F. ulmarius*, *Daldinia concentrica*, *Ganoderma applanatum*, *Pleurotus ostreatus*, *Polyporus betulinus*, *P. cuticularis*, *P. giganteus*, *P. hispidus*, *P. radiatus*, *P. squamosus*, *Polystictus versicolor*, *Poria obliqua*, *Stereum purpureum*, *Ustulina vulgaris*].

CHAPPELLIER, A., et RAUCOURT, M. Les rapports entre les traitements arsenicaux antidoryphoriques et le gibier. Nouvelles études. *Annales des Épiphyties*, Paris, 1942, nouv. sér., tome VIII, fasc. 1, p. [1]-44, fig. 1-11, pl. I-III.
[*Leptinotarsa decemlineata*].

CHIAROMONTE, A[lfonso]. Su « La disinfestazione dei semi di cotone per mezzo del calore ». *L'Agricoltura Coloniale*, Firenze, 1943, anno XXXVII, n. 2, p. [49].
[Some remarks on the note of O. Marilli (see this *Bulletin* 1943, No. 4, p. 65)].

CLAUSEN, R. Essai de lutte contre l'acarien du fraisier. *Revue Horticole Suisse*, Châtelaine-Genève, 1943, XVI^e année, n° 2, p. [23]-31, fig. 1-10.
[*Tarsonemus pallidus*].

CRÉPIN, Ch., et BUSTARRET, J. La destruction des fanes de pomme de terre en tant que pratique culturale. *Comptes rendus hebdomadaires des séances de l'Académie d'Agriculture de France*, Paris, 1942, tome XXVIII, n° 11, p. 455-457.

CROMWELL, B. T., [and] HUNTER, J. G. Chlorosis in tomatoes. *Nature*, London, 1942, Vol. 150, No. 3812, pp. 606-607.

DANCASTER, Ernest A. Catalysts for sodium chlorate in weed destruction. *Nature*, London, 1942, Vol. 150, No. 3816, pp. 737-738.

DE CILLIS, Ugo. La bianconatura dei grani duri. *Stazione sperimentale di Granicoltura per la Sicilia, Pubblicazione N. 10*, Catania, 1942, 71 pp., 3 tav. Bibliografia, pp. [63]-67.
[A physiological disorder caused through climatic conditions].

DELAMARRE DE MONCHAUX. Invasion de la mouche de l'oignon et de la mouche du chou. *Comptes rendus hebdomadaires des séances de l'Académie d'Agriculture de France*, Paris, 1942, tome XXVIII, n° 11, p. 441-442.
[*Anthomyia ceparum, A. brassicae*].

DELOUSTAL, J., et CARRÉ, P. Sur la prétendue valeur antidoryphorique de certaines solutions alcalines. *Revue Horticole*, Paris, 1942, 114^e année, n° 2094, p. 211-212.
[*Leptinotarsa decemlineata*].

DESCHIENS, R. Présentation de documents relatifs à *Heterodera marioni* et à l'anguillulose des végétaux exotiques. *Bulletin de la Société de Pathologie exotique*, Paris, 1941, tome XXXIV, n^os 8-10, p. 190-192, pl. I-II.

DICKER, G. H. L. On *Rubus* aphides and leaf-hoppers as possible vectors of raspberry mosaic. *The Journal of Pomology and Horticultural Science*, London, 1940, Vol. XVIII, No. 3, pp. 275-286. References, p. 286.

DILLON WESTON, W. A. R. Seed disinfection of barley and oats. *Agriculture*, London, 1942, Vol. XLIX, No. 3, pp. 157-160, 1 pl.

ENE, Ilie-Mircea. Experimentaluntersuchungen über das Verhalten des Maikäferengerlings (*Melolontha* spec.). *Zeitschrift für angewandte Entomologie*, Berlin, 1942, Bd. XXIX, Heft 4, S. [529]-600, Abb. 1-23. Schrifttum, S. 598-600.

FACCINI, G. C. Panorami rurali dell'Alto Adige. La lotta contro la ticchiolatura. *Giornale di Agricoltura*, Roma, 1943, anno LIII, n. 2, p. 10, 1 fig.
[*Venturia*].

FAES, H[enri]. Résultats obtenus en 1942 par l'application des produits anticryptogamiques à base de cuivre et autres. *La Terre Vaudoise*, Lausanne, 1943, XXXV^me année, n° 2, p. 18.

FAES, H[enri]. L'acariose (court-noué) de la vigne. *La Terre Vaudoise*, Lausanne, 1943 XXXV^me année, n° 4, p. 40.
[*Phyllocoptes vitis*].

FERRAGUTI, A. Il polisolfuro di calcio contro la ticchiolatura. *L'Agricoltore Ferrarese*. Ferrara, 1942, anno XLVII, n. 12, pp. 273-274.
[*Venturia*].

FINNEY, D. J. Examples of the planning and interpretation of toxicity tests involving more than one factor. *The Annals of Applied Biology*, Cambridge, 1942, Vol. 29, No. 3, pp. 330-332. References, p. 332.

FRANCKE, C. Wald im Kampf. *Tharandter Forstliches Jahrbuch*, Berlin, 1942, 93. Bd., Heft 11/12, S. [549]-554. Schrifttum, S. 554.

FUCHS, W. H. Zur Frage der Frostschäden bei Kernobst. *Kühn-Archiv*, Berlin, 1942. Bd. 56, S. [27]-40. Schriftennachweis, S. 39-40.

FULMEK, L. Wirtsindex der Aleyrodiden- und Cocciden-Parasiten. *Entomologische Beihefte aus Berlin-Dahlem*, Berlin-Dahlem, 1943, Bd. 10, S. V-[VI] u. [1]-100.

GHIDINI, Gian Maria. Materiali per una bibliografia zoologica dell'Africa Orientale Italiana. *Rivista di Biologia Coloniale*, Roma, 1942, vol. V, fasc. V-VI, pp. [209]-218.
[For the preceding bibliographical lists prepared by the same author, see this *Bulletin* 1942, No. 10, p. 147].

GLYNNE, Mary D. *Cercosporella herpotrichoides* Fron, causing eyespot of wheat in Great Britain. *The Annals of Applied Biology*, Cambridge, 1942, Vol. 29, No. 3, pp. 254-264, pl. 7. References, p. 264.

GLYNNE, Mary D. Eyespot in wheat. A disease causing lodging and straggling. *Agriculture*, London, 1942, Vol. XLIX, No. 2, pp. 91-94, 1 pl.
[*Cercosporella herpotrichoides*].

González de Haro, Salvador. Empleo de los derivados del flúor como insecticidas, *Ministerio de Agricultura. Sección de Publicaciones, Prensa y Propaganda*, Madrid, 1942, año XXXIV, 2.ª série, nº. 48, 4 págs.

Görg, Fritz. Die wichtigsten Arbeiten auf dem Gebiete des allgemeinen Forstschutzes seit dem Jahre 1938. *Tharandter Forstliches Jahrbuch*, Berlin 1942, 93. Bd., Heft 11/12, S. 687-699.

Gösswald, Karl. Die Massenzucht von Königinnen der kleinen roten Waldameise im Wald. *Zeitschrift für angewandte Entomologie*, Berlin 1942, Bd. XXIX, Heft 4, S. [659]-683, Abb. 1-11. Schrifttum, S. 683.
[*Formica rufa rufo-pratensis minor*].

Gough, H. C. Laboratory and field experiments on the control of wireworms. *The Annals of Applied Biology*, Cambridge, 1942, Vol. 29, No. 3, pp. 280-289. References, p. 289.
[Elateridae].

Gough, H. C., and Evans, A. C. Some notes on the biology of the click beetles *Agriotes obscurus* L. and *A. sputator* L. *The Annals of Applied Biology*, Cambridge, 1942, Vol. 29, No. 3, pp. 275-279. References, p. 279.

Guillaume, A., et Bégon, H. Les parasites et les maladies de l'ail : conservation des bulbes. *Comptes rendus hebdomadaires des séances de l'Académie d'Agriculture de France*, Paris, 1942, tome XXVIII, nº 19, p. 655-658.

Hadorn, Ch. Vergleichende Versuche im Jahre 1942 über Kupfersparmöglichkeiten im Weinbau. *Schweizerische Zeitschrift für Obst- und Weinbau*, Wädenswil 1943, 52. Jahrg., Nr. 1, S. [1]-21, Abb. 1-6.

Hadorn, Ch. Vergleich der Wirksamkeit verschiedener Spritzbrühen gegen den falschen Rebenmehltau. *Schweizerische Zeitschrift für Obst- und Weinbau*, Wädenswil 1943, 52. Jahrg., Nr. 3, S. 54-69, Abb. 1-5.
[*Plasmopara viticola*].

Haldane, J. B. S. Seed potato disinfection by conveyor belt dipper. *Nature*, London, 1942, Vol. 150, No. 3817, p. 769.

Hanf, M. Ein Beitrag zur Frage der Beziehung zwischen Unkrautwuchs, Deckfrucht und Boden. *Pflanzenbau*, Leipzig 1942, 19. Jahrg., Heft 6, S. [155]-174, Abb. 1-7. Schrifttum, S. 174.

Heger, A. Waldbauliche Planung und Forstschutz. *Tharandter Forstliches Jahrbuch*, Berlin 1942, 93. Bd., Heft 11/12, S. [555]-586, Abb. 1-4.

Heinze, Kurt. Die Feldbereinigung bei Sojakulturen als Schutzmassnahme gegen die Ausbreitung des virösen Sojamosaiks. Vorläufige Mitteilung. *Der Züchter*, Berlin 1942, 14. Jahrg., Heft 11, S. 254-258.

Hering, Erich Martin. Neotropische Buprestiden-Minen. *Arbeiten über physiologische und angewandte Entomologie aus Berlin-Dahlem*, Berlin-Dahlem 1942, Bd. 9, Nr. 4, S. 241-249, Fig. 1-11.

Hering, Erich Martin. Ein neuer Spargelfeind. Die Zwergspargelfliege (*Ptochomyza asparagi* g. n., sp. n.). *Zeitschrift für Pflanzenkrankheiten (Pflanzenpathologie) und Pflanzenschutz*, Stuttgart 1942, 52. Bd., Heft 12, S. [529]-533.

Hickman, C. J. The red core root disease of the strawberry caused by *Phytophthora fragariae* n. sp. *The Journal of Pomology and Horticultural Science*, London, 1940, Vol. XVIII, No. 2, pp. 89-118, figs. 1-12. References, pp. 116-118.

Hilkenbäumer, Friedrich. Einfluss von Unterlage und Standort auf den Frostschaden an Kernobst im Winter 1939/40 in der Baumschule. *Kühn-Archiv*, Berlin 1942, Bd. 56, S. 1-24, Abb. 1-5. Schrifttum, S. 24.

Holdheide, W. Massenauftreten von *Mikiola fagi*, der Buchengallmücke, im Allgäu im Sommer 1941. *Tharandter Forstliches Jahrbuch*. Berlin 1942, 93. Bd., Heft 11/12, S. 676-681, Abb. 1-2.

Hunter, James G. A chlorosis of bracken due to manganese deficiency. *Nature*, London, 1942, Vol. 150, No. 3811, pp. 578-579.

Imms, A. D. The locust plague. *Nature*, London, 1942, Vol. 150, No. 3816, pp. 742-743.

Jahn, Ernst. Beiträge zur Perithezienentwicklung von *Venturia inaequalis* (Cooke-Aderhold) in Reinkultur. *Die Gartenbauwissenschaft*, Berlin 1942, 17. Bd., 2. Heft, S. [151]-155. Literaturverzeichnis, S. 155.

Janecek, Maria. *Cybocephalus politus* Germ., ein Feind der San José-Schildlaus. *Arbeiten über physiologische und angewandte Entomologie aus Berlin-Dahlem*, Berlin-Dahlem 1942, Bd. 9, Nr. 4, S. 237-241, Fig. 1-10. Literatur, S. 241.
[*C. politus* and *Aspidiotus perniciosus*].

JONES, Margaret G. The summer hosts of *Aphis fabae*, Scop. *Bulletin of Entomological Research*, London, 1942, Vol. 33, Pt. 3, pp. 161-169. References, p. 169.

KAUFMANN, O. Über Reaktionen der schossenden Rapspflanze auf Rapsglanzkäferfrass und andere Schäden. *Zeitschrift für Pflanzenkrankheiten (Pflanzenpathologie) und Pflanzenschutz*, Stuttgart 1942, 52. Bd., Heft 11, S. 486-509, Abb. 1-10. Schrifttum, S. 508-509.
[*Meligethes aeneus*].

KEYWORTH, W. G. *Verticillium* wilt and virus diseases of the hop. *The Annals of Applied Biology*, Cambridge, 1942, Vol. 29, No. 3, pp. 323-324.
[*Verticillium albo-atrum, Heterodera schachtii*, mosaic].

KOMÁREK, Julius. Forstentomologische und andere Beobachtungen über das Tannensterben in Böhmen, Mähren und den Karpatenländern. *Tharandter Forstliches Jahrbuch*, Berlin 1942, 93. Bd., Heft 11/12, S. [615]-630.
[*Cacoecia murinana, Dreyfusia nordmannianae*].

KÖRTING, A. Über die Lebensweise des gefleckten Kohltriebrüsslers (*Ceutorrhynchus quadridens Panz.*) und seine Bedeutung als Ölfruchtschädling. *Arbeiten über physiologische und angewandte Entomologie aus Berlin-Dahlem*, Berlin-Dahlem 1942, Bd. 9, Nr. 4, S. [207]-237, Fig. 1-4. Literatur, S. 236-237.

KOVACHEVSKY, Iv. Cr. Die Viruskrankheiten der Paprikapflanze. *Archiv der bulgarischen landwirtschaftlichen Gesellschaft, Pflanzenbau*, Sofia, s. d., 1. Bd., S. [25]-102, Abb. 1-58. Literatur, S. [101]-102.
In Bulgarian, with title and summary also in German].

KOVACHEVSKY, Iv. Chr. Die Buntblättrigkeit der Paprikapflanze (*Capsicum annuum*) (*Medicago* virus 2 K. Smith var. *typicum* Black u. Price). Vorläufige Mitteilung. *Zeitschrift für Pflanzenkrankheiten (Pflanzenpathologie) und Pflanzenschutz*, Stuttgart 1942, 52. Bd., Heft 12, S. 533-540, Abb. 1-7. Literatur, S. 540.

KUHNHOLTZ-LORDAT. Notes de Pathologie végétale. *Annales des Epiphyties*, Paris, 1942, nouv. sér., tome VIII, fasc. 1, p. [61]-80, 39 fig. Ouvrages citées, p. 66, 79. Contains : —

1. La tavelure du néflier du Japon ou bibacier (*Eriobotrya japonica*). [*Fusicladium eriobotryae*].
2. Syntrophie à deux parasites de la garance. [*Phacidium repandum* and *Phoma atomus* on *Rubia tinctorum*].
3. La « maladie du rouge » du mûrier. [*Nectria cinnabarina* and *Fusarium urticearum*].
4. Un cas de syntrophie à trois parasites. [*Helminthosporium teres, Puccinia simplex, Heterosporium hordei*].
5. Un cas de « folletage » sur tabac.
6. Les hôtes de relais. [In the case of *Cuscuta monogyna* and of *Claviceps purpurea*].
7. Syntrophie à deux parasites sur le chiendent-pied-de-poule. [*Phyllachora cynodontis* and *Puccinia cynodontis* on *Cynodon dactylon*]].

KUNIKE, G. Kornkäferbekämpfung. *Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin 1943, 23. Jahrg., Nr. 1, S. 2-3.
[*Calandra granaria*].

KÜTHE, Karlheinz. Dauerhaftes Ausrotten der Berberitzensträucher zur Bekämpfung des Getreideschwarzrates. *Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin, 1943, 23. Jahrg., Nr. 1, S. 3-4.
[*Berberis vulgaris* and *Puccinia graminis*].

LANSADE, M. La maladie du flétrissement bactérien de la pomme de terre. *La Pomme de Terre Française*, Lille, 1942, 5me année, nº 41, p. [1]-3.

LENZA, P. Un parassita del ricino. *Giornale di Agricoltura*, Roma, 1943, anno LIII, n. 5, p. 28.
[*Nezara viridula*].

LE PELLEY, Richard H. A method of sampling thrips populations. *Bulletin of Entomological Research*, London, 1942, Vol. 33, Pt. 3, pp. 147-148.

LEPESME, Pierre. Contribution à l'étude de *Volumnus obscurus* Popp. (*Hemiptera Capsidae*), agent de la " coulure " des fleurs de caféier en Afrique centrale. *Annales des Epiphyties*, Paris, 1942, nouv. sér., tome VIII, fasc. 1, p. [47]-59, fig. 1-3, 1 pl.

LOEWEL, E. L., [und] SACHTLEBEN, [H.]. Blattwespenlarven als Apfelschädlinge. *Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin 1943, 23. Jahrg., Nr. 1, S. 5.
[*Taxonus glabratus* (*Ametastegia glabrata*)].

LOWENSTEIN, Otto. A method of physiological assay of pyrethrum extracts. *Nature*, London, 1942, Vol. 150, No. 3817, pp. 760-762, figs. 1-3.

MAIER, Willi. Kann die Stippfleckenkrankheit der Apfel durch Bor geheilt werden ? *Geisenheimer Mitteilungen*, Geisenheim 1942, 57. Jahrg., Nr. 12, S. 90-94, Abb. 1-6. Schrifttum, S. 94.

MAIER, Willi. Untersuchungen zur Frage der Uebertragbarkeit der Reisigkrankheit durch den Boden. *Wein und Rebe*, Mainz 1943, 25. Jahrg., Nr. 1/2, S. 29-41. Schriftenverzeichnis, S. 41.

MARCHAL, Em. Observations et recherches effectuées à la Station de Phytopathologie de l'Etat pendant l'année 1940. *Bulletin de l'Institut agronomique et des Stations de Recherches de Gembloux*, Gembloux, 1941, tome X, nos 1-4, p. [5]-10.
[With titles and summaries also in Flemish, German and English].

MARILLI, Otello. La disinfestione dei semi di cotone per mezzo del calore. *L'Agricoltura Coloniale*, Firenze, 1943, anno XXXVII, n. 1, pp. 12-23, 1 diagr. Principali pubblicazioni consultate, p. 23.

MARTELLI, Giuseppe M. Notizie su due Ditteri viventi in Tripolitania sul peperone e rapporti intercorrenti fra essi. *L'Agricoltura Coloniale*, Firenze, 1943, anno XXXVII, n. 2, pp. 31-43. Bibliografia, pp. 41-43.
[See also this *Bulletin* 1942, No. 5, pp. 65-67. - *Lonchaea splendida* and *Ceratitis capitata*].

MARTIN, Hubert. The significance of the bio-assay in studies of fungicidal action. *The Annals of Applied Biology*, Cambridge, 1942, Vol. 29, No. 3, pp. 326-328. References, p. 328.

MASSEE, A. M. Aphis transmission of strawberry crinkle in Great Britain. *The Journa of Pomology and Horticultural Science*, London, 1942, Vol. XX, No. 1 and 2, pp. 42-48, pls. I-II. References, p. 48.

MASSEE, A. M. Some important pests of the hop. *The Annals of Applied Biology*, Cambridge, 1942, Vol. 29, No. 3, pp. 324-326.
[*Phorodon humuli*, *Tetranychus telarius*, *Contarinia humuli*, *Psylliodes attenuata* and *Calocoris fulvomaculatus*].

MÉTALNIKOV, S. Utilisation des microbes dans la lutte contre les teignes de la farine. *Comptes rendus des séances de la Société de Biologie et de ses filiales*, Paris, 1942, tome CXXXVI, nos 13-14, p. 503-504.
[*Ephestia elutella*].

METCALFE, George. The watermark disease of willows. I. Host-parasite relationships. *The New Phytologist*, Cambridge, 1940, Vol. 39, No. 3, pp. 322-332, figs. 1-2, pl. 5. References, p. 332.
[In addition to *Bacterium salicis* three other bacteria (designated A, B, and C) have constantly been isolated from watermarked willow wood].

METCALFE, T. Mole control. *Agriculture*, London, 1942, Vol. XLIX, No. 3, pp. 153-155.

METZGER, Ilse. Versuche zur Aufbewahrung lebender Sporen von Weizen- und Gerstenmehltau. *Kühn-Archiv*, Berlin 1942, Bd. 56, S. [163]-172. Literaturverzeichnis, S. 172.
[*Erysiphe graminis*].

MEURICE, R. Note sur la persistance de l'arsenic après traitement des pommes de terre à l'arséniate de plomb. *Bulletin de l'Institut agronomique et des Stations de Recherches de Gembloux*, Gembloux, 1941, tome X, nos 1-4, p. [84]-85.
[With titles and summaries also in Flemish, German and English].

MORETTI, Giampaolo. Ricerche sulle proprietà insettifughe e insetticide dell'olio di lauro (olii grassi ed essenziali e loro sali alcalini). *Bollettino di Zoologia agraria e Bachicoltura della R. Università di Milano*, Torino, 1942, vol. XI (1941-42), pp. [49]-74, tav. I.

MORETTI, Giampaolo. Interventi d'urgenza contro la Stilpnozia del salice. *Bollettino di Zoologia agraria e Bachicoltura della R. Università di Milano*, Torino, 1942, vol. XI (1941-42), pp. [75]-88, tav. I.
[*Stilpnotia salicis*].

MORETTI, Giampaolo. Studî sui Tricotteri : XV.Comportamento del *Triaeno des bicolor* Curt. (*Trichoptesa-Leptoceridae*) nelle risaie a vicenda e in allevamenti sperimen-

tali (ecologia, regime dietetico, dannosità ; morfologia dell'apparato boccale). *Bollettino di Zoologia agraria e Bachicoltura della R. Università di Milano*, Torino, 1942, vol. XI (1941-42), pp. [89]-131, figg. 1-7, tav. I-IV. Indice bibliografico, pp. 128-129.

MÜHLSTEPH, W. Wege zum chemischen Nachweis von Abgas- (Rauch-) Schäden mit besonderer Rücksicht auf den Wald. *Tharandter Forstliches Jahrbuch*, Berlin 1942, 93. Bd., Heft 11/12, S. [631]-658. Schrifttum, S. 654-658.

NIETHAMMER, A. Ernährungsphysiologische Untersuchungen an Fusarien, unter Hervorhebung der Ölspeicherung. *Archiv für Mikrobiologie*, Berlin 1942, 13. Bd., 2. Heft, S. [140]-149, Abb. 1. Literatur, S. 149.

OSSOWSKI, Leon. The cockchafer and methods of defence against it. *Quarterly Journal of Forestry*, London, 1941, Vol. XXXV, No. 4, pp. 147-150.
[*Melolontha vulgaris* and *M. hippocastani*].

PARKER-RHODES, A. F. A new method in analytical and comparative toxicology. *The Annals of Applied Biology*, Cambridge, 1942, Vol. 29, No. 3, p. 329.
[An improved method for the statistical analysis of fungicidal data].

PARKIN, E. A. Symbiosis and siricid woodwasps. *The Annals of Applied Biology*, Cambridge, 1942, Vol. 29, No. 3, pp. 268-274, figs. 1-2. References, p. 274.
[*Sirex gigas*, *S. cyaneus* and *Stereum sanguinolentum*].

PERKINS, J. F. On a new species of *Ephialtes* (Hym., Ichneumonidae) parasiting the codling moth. *Bulletin of Entomological Research*, London, 1942, Vol. 33, Pt. 3, pp. 171-174. References, p. 174.
[*E. cydiae* sp. nov. on *Cydia pomonella*].

PIACCO, R. Effetti del raffreddamento causato dalla grandine in risaia. *Risicoltura*, Vercelli, 1942, anno XXXI, n. 12, pp. 171-182, 7 diagr.

POTTER, C. The ' film technique ' of insecticide testing. *The Annals of Applied Biology*, Cambridge, 1942, Vol. 29, No. 3, pp. 329-330. References, p. 330.

PREIL, H. Der Lärchenblasenfuss (*Taeniothrips laricivorus* Krat.) und das Lärchenwipfelsterben. *Tharandter Forstliches Jahrbuch*, Berlin 1942, 93. Bd., Heft 11/12, S. [587]-614, Abb. 1-8. Schrifttum, S. 613-614.

PROVASOLI, Luigi. Gli afidi delle rose. Nota I : *Macrosiphum rosae* L. *Bollettino di Zoologia agraria e Bachicoltura della R. Università di Milano*, Torino, 1942, vol. XI (1941-42), pp. [3]-48, figg. I-V, tav. I. Bibliografia, pp. 46-47.

RAMCHANDRA RAO, Y. Some results of studies on the desert locust (*Schistocerca gregaria*, Forsk.) in India. *Bulletin of Entomological Research*, London, 1942, Vol. 33, Pt. 4, pp. 241-265. References, pp. 264-265.

RAUCOURT, M., et BÉGUÉ, H. Revue de phytopharmacie (VI). *Annales Agronomiques*, Paris, 1942, 12e année, nº 3, p. [451]-486, 2 fig. Références bibliographiques p. 479-486.

RAUCOURT, M., TROUVELOT, B., et VÉZIN, Ch. La lutte contre le doryphore en 1942. *Comptes rendus hebdomadaires des séances de l'Académie d'Agriculture de France*, Paris, 1942, tome XXVIII, nº 11, p. 440-441.
[*Leptinotarsa decemlineata*].

RIEHM, E. Die Heidemoorkrankheit oder Urbarmachungs-Krankheit. *Die Umschau in Wissenschaft und Technik*, Frankfurt a. M. 1942, 46. Jahrg., Heft 33, S. 490-492, 4 Bild.

ROBAK, Hakon. Cultural studies in some Norvegian wood-destroying fungi. A biological study and contribution to diagnostics of wood decay. *Meddelelse Nr. 25 fra Vestlandets Forstlige Forsøksstation*, Bergen 1942, 248 pp., 42 figs., 12 pls. Literature, pp. 216-225.
[*Corticium evolvens*, *Stereum* spp., *Polyporus abietinus*, *Lenzites sepiaria*, *Trametes* spp.].

RUIZ CASTRO, Amelio. La " oruga " del almendro. *Ministerio de Agricultura. Sección de Publicaciones, Prensa y Propaganda. Hojas Divulgadoras*, Madrid, 1942, año XXXIV, 2ª. série, nº. 49, 16 págs., 10 figs.
[*Aglaope infausta*].

SCHAERFFENBERG, Bruno. Der Einfluss von Humusgehalt und Feuchtigkeit des Bodens auf die Frasstätigkeit der Elateridenlarven. *Anzeiger für Schädlingskunde*, Berlin 1942, XVIII. Jahrg., Heft 12, S. [133]-136, 1 Abb. Schrifttum, S. 136.

SEEMANN, Josef. Über die Bedeutung der Unterkühlung für die Selektion frostresistenter Bohnenpflanzen. *Der Züchter*, Berlin 1942, 14. Jahrg., Heft 11, S. 258-264, Abb. 1-8. Literatur, S. 263-264.

SELLERS, Wendell F. The distribution of the European spruce sawfly, *Diprion polytomum* (Htg.) in the Scandinavian and eastern Baltic countries. *Bulletin of Entomological Research*, London, 1942, Vol. 33, Pt. 3, pp. 149-159, fig. 1, pl. IV. References, p. 159.

SELMAN, Ireson W. The relation between mosaic infection and yield reduction in glasshouse tomatoes. *The Journal of Pomology and Horticultural Science*, London, 1942, Vol. XX, No. 1 and 2, pp. 49-58, figs. 1-2. References, p. 58.

SPEYER, [W.]. Rübenaaskäfer an Cruciferen, Bohnen usw. *Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin 1943, 23. Jahrg., Nr. 1, S. 5.
[*Blithophaga opaca*].

STELZNER, G. Zur Frage der Virusübertragung durch Samen, insbesondere des *X*-, *Y*- und Blattrollvirus der Kartoffel. *Der Züchter*, Berlin 1942, 14. Jahrg., Heft 10, S. [225]-234. Literatur, S. 233-234.

STUMMER, Albert. Über die Frostresistenz von Selbstungen und Kreuzungen der europäischen Rebe. *Das Weinland*, Wien 1943, 15. Jahrg., Nr. 1, S. 4-5.

STURM, Hans. Untersuchungen über Buschhornblattwespen (*Diprion*). (Schluss). *Zeitschrift für angewandte Entomologie*, Berlin 1942, Bd. XXIX, Heft 4, S. [601]-635, Abb. 7-13. Literaturverzeichnis, S. 634-635.
[For the first part of this work see this *Bulletin* 1943, No. 1, p. 13].

TINNEY, J. R. Eradication of wild onions. *Agriculture*, London, 1942, Vol. XLIX, No. 3, pp. 155-157. References, p. 157.
[*Allium vineale*].

TRESCHOW, Cecil. Bekaempelse af *Mycogone perniciosa* i Champignonkulturer. *Friesia*. København 1942-1943, Bind II, Hefte 4-5, side 232-238. Literatur, side 237-238.
[In Danish, with title and summary also in English : — ' Control of the *Mycogone* disease of mushrooms '].

UBRIZSY, Gábor. Farontó gombák a Nyírségröl. *A M. Kir. Kertészeti Akadémia Közleményei*, Budapest 1942, VIII. évf., 113.-121.o.
[In Hungarian, with title and summary also in French : — ' Des champignons xylophytes des forêts de Nyirség '].

VAN DEN BRUEL, W. E. A propos de la lutte contre les mouches de la chicorée de Bruxelles, *Napomyza lateralis* Fall. et *Ophiomyia pinguis* Fall. Nouvelles observations sur le traitement à l'eau chaude et sur l'appareillage nécessaire. *Bulletin de l'Institut agronomique et des Stations de Recherches de Gembloux*, Gembloux, 1941, tome X, nos 1-4, p. [26]-52, fig. I-IV. Bibliographie, p. 50.
[With titles and summaries also in Flemish, German and English].

VAN EMDEN, F. I. A Tachinid parasitic on *Plutella maculipennis*, Curt. *Bulletin of Entomological Research*, London, 1942, Vol. 33, Pt. 4, pp. 223-225, fig. 1.
[*Cadurcia plutellae* sp. n.].

v. ZEHMEN, H. Versuche über Abschreckmittel für Nonnenraupen im Jahre 1938. *Anzeiger für Schädlingskunde*, Berlin 1942, XVIII. Jahrg., Heft 12, S. 137-139.
[*Lymantria monacha*].

WACHS, Horst. Die Flugzeit der Nonne in Sachsen in den Jahren 1937-1942. *Tharandter Forstliches Jahrbuch*, Berlin 1942, 93. Bd., Heft 11/12, S. 681-687.
[*Lymantria monacha*].

WAIN, R. L. The use of toxic polynitro derivatives in pest control. I. The estimation of dinitro-*o*-cresol and dinitro-*o*-cyclohexylphenol. *The Annals of Applied Biology*, Cambridge, 1942, Vol. 29, No. 3, pp. 301-308. References, pp. 307-308.

WARE, W. M. Hop downy mildew. *The Annals of Applied Biology*, Cambridge, 1942, Vol. 29, No. 3, pp. 322-323.
[*Pseudoperonospora humuli*].

WELLENSTEIN, Gustav. Anregungen und Versuche zur Verbesserung der Borkenkäferbekämpfung, I. Teil. *Zeitschrift für Forst- und Jagdwesen*, Berlin 1942, LXXIV. Jahrg., 9. Heft, S. 337-349.
[Scolytidae].

WHYTE, R. O. (Edited by). The control of weeds. A symposium on the prevention and eradication of weeds on agricultural land by cultural, chemical and biological means. *Herbage Publication Series, Bulletin 27*, Aberystwyth, 1940, 168 pp., 64 figs., 7 diagrams. References, pp. 26, 52-54, 110-112, 129-130. (Published by the Imperial Bureau of Pastures and Forage Crops). Price : 7s. 6d.

WIESMANN, R. Neue Versuche über die Bekämpfung der Kräuselmilben. *Schweizerische Zeitschrift für Obst- und Weinbau*, Wädenswil 1943, 52. Jahrg., Nr. 2, S. [25]-42, Abb. 1-3.
[*Phyllocoptes vitis, Epitrimerus vitis*].

WIGGLESWORTH, V. B. Some notes on the integument of insects in relation to the entry of contact insecticides. *Bulletin of Entomological Research*, London, 1942, Vol. 33, Pt. 3, pp. 205-218, figs. 1-6. References, p. 218.

WOJTYLKO, Ernst. Das Fichtensterben durch Hallimasch im Bereich der Forstverwaltung Rzyki der Herrschaft Saybusch O.-S. *Tharandter Forstliches Jahrbuch*, Berlin 1942, 93. Bd., Heft 11/12, S. [659]-676, Abb. 1-6.
[*Agaricus melleus*].

WOSTMANN, G. Der fluoreszenzoptische Nachweis von *Ustilago tritici* im Weizenkorn. *Kühn-Archiv*, Berlin 1942, Bd. 56, S. [247]-253. Schriftenverzeichnis, S. 253.

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